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### Geroprotective effects of menopausal hormonal therapy among females with non-iatrogenic hypergonadotropic hypogonadism

#### Aim

To evaluate features of replicative (leukocyte telomere length) markers among females with and without non-iatrogenic forms of hypergonadotropic hypogonadism (physiological menopause, POI, Turner syndrome).

#### Background

One of the most promising theory of female ageing is endocrine-telomerase theory. Promising results of menopausal hormonal therapy (MHT) in terms of WHI (World Health Initiative) and protective influence of estradiol on oocyte telomeres in vitro are reasons for studying of geroprotective effects of sex steroid replacement therapy in vivo.

#### Methodology

Original, active, one-moment, comparative study with 138 females (20-75 y.o.): 26 females receiving menopausal hormonal therapy (MHT)  $\geq 5$  years + 27 females in physiological menopause without MHT + 33 females with primary ovarian insufficiency and HRT  $\geq 5$  years + 24 healthy reproductive age females + 28 females with Turner syndrome (45, XO). Genetical analysis: via Real Time Q-PCR + Flow-FISH + fluorescent hybridization in situ).

#### Results

Leukocyte telomere length was significantly different ( $p < 0,001$ ) among groups: Menopausal females on MHT  $> 5$  years ( $n=26$ ) – 9,8 [9,5 – 10,0] kB; Menopausal females without MHT ( $n=27$ ) – 9,8 [9,6 – 10,3] kB. Primary ovarian insufficiency (POI,  $n=32$ ) – 10,0 [7,9 – 10,7] kB. Healthy females (19-44 years,  $n=24$ ) – 10,8 [10,0 – 13,1] kB; Turner syndrome (45, XO,  $n=26$ ) 8,2 [6,8 – 9,2] kB. Leukocyte telomere length correlates moderately and negatively with FSH level among females ( $r = -0,434$ ,  $p < 0,001$ ).

#### Conclusions

Reproductive healthy females, menopausal females with/without MHT and females with POI and HRT have equatable leukocyte telomere length. Females with Turner syndrome (45, XO) without receiving of HRT have shortest telomere length. FSH level and telomere length are reciprocally correlating markers.

**Keywords:** telomeres, 17- $\beta$ -estradiol, menopause, Turner syndrome, comorbidity, hypergonadotropic.

**Biography**

Robert K. Mikheev has graduated in 2020 with honors from A.I. Yevdokimov Moscow State University of Medicine and Dentistry and successfully finished residency in the Endocrinology Research Centre (Moscow, Russia) as endocrinologist. He is postgraduate student and MD in the Endocrinology Research Centre (Moscow, Russia), managing editor of scientific peer-reviewed medical journal "Bulletin of Reproductive Health". Scientific interests: diabetes mellitus, goiter, menopause, obesity, metabolism, gerontology, internal medicine. Scopus H-Index: 4.

